Ontario

Apprenticeship
In-school Curriculum Standards

Mobile Crane Operator
Branch 1

Level 2, 3 and 4

339A

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Introduction

This new curriculum standard for the Mobile & Tower Crane Operator trade is designed from the learning outcomes, which were developed from the industry-approved training standard.

The curriculum is organized into a common core for 339A, B and C, three additional levels for Mobile Crane Operator Branch 339A and two additional levels for Tower Crane Operator 339B. Each includes reportable subjects containing learning outcomes to reflect the units of the training standard. Depending on the trade code, specific curriculum standards are to be used. Mobile Crane 339C requires the use of the Level 1 Common Core only. Mobile Crane 339A requires the use of Level 1, Common Core, and the Mobile Crane 339A curriculum combining Levels 2, 3 and 4. For Tower Crane 339B the Level 1, Common Core and the Tower Crane Level 2 and 3, combined curriculum is to be used. The hour chart indicates how the curriculum can be delivered in the current block-release format and summarizes the hours of training for each reportable by level.

The reportable subjects are cross-referenced to the training standard for ease of comparison.

Each reportable subject and learning outcome identifies a recommended number of training hours. This hour allotment is broken into hours for instruction in theory and practical application. The division of the curriculum into reportable subjects follows a natural progression of learning through the training program. This structure will allow training centres and apprentices flexibility in program delivery while still observing the importance of sequencing learning in a logical progression.

The curriculum is framed by and includes specific references to terminal performance objectives in the Apprenticeship Training Standards for the Mobile & Tower Crane Operator trade. However, the curriculum identifies only the learning that takes place off the job, in a training environment. The in-school program focuses primarily on the theoretical knowledge required to master the performance objectives of the Training Standards. Employers are expected to extend the apprentice's knowledge and skills through appropriate practical training on the work site. Regular evaluations of an apprentice's knowledge and skills are conducted throughout training to ensure that all apprentices have achieved the learning outcomes identified in the curriculum standard. The balance between theoretical and practical evaluation is identified for each unit of learning outcomes.

Implementation date:
January 1, 2008

Program Summary of Reportable Subjects

Mobile Crane Operator - Branch 1 (339A) - Level 2 - Basic Hoisting Applications

Number	Reportable Subjects	Hours Total	Hours Theory	Hours Practical
S0309	Lift planning – hydraulic cranes	12	5	7
S0310	Hydraulic crane operations	28	4	24
S0311	Lift planning – conventional cranes	12	5	7
S0312	Conventional crane operations	28	4	24
	Total	**80**	**18**	**62**

Mobile Crane Operator - Branch 1 (339A) - Level 3 - Advanced Hoisting Applications

Number	Reportable Subjects	Hours Total	Hours Theory	Hours Practical
S0313	Lift planning – hydraulic cranes	8	5	3
S0314	Hydraulic crane operations	32	2	30
S0315	Lift planning – conventional cranes	8	5	3
S0316	Conventional crane operations	32	2	30
	Total	**80**	**14**	**66**

Mobile Crane Operator - Branch 1 (339A) - Level 4 - Specialized Hoisting Applications

Number	Reportable Subjects	Hours Total	Hours Theory	Hours Practical
S0317	Specialized hoisting operations	80	38	42
	Total	**80**	**38**	**42**

Program Summary by Level & Evaluation & Testing

Mobile Crane Operator - Branch 1 (339A) - Level 2 - Basic Hoisting Applications

Number:	S0309
Title:	**Lift planning – Hydraulic cranes**
Duration:	12 Total Hours
	Theory: 5 hours Practical: 7 hours
Prerequisites:	Level 1
Co-requisites:	N/A

1.1	**Site assessment**		
	1 Total Hour	Theory: 0.5 hour	Practical: 0.5 hour
1.2	**Crane lifting capacity**		
	0.5 Total Hour	Theory: 0.5 hour	Practical: 0 hours
1.3	**Load/capacity charts**		
	10.5 Total Hours	Theory: 4 hours	Practical: 6.5 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:

Equipment requirements:
Mobile hydraulic crane

1.1 – Site assessment

Cross Reference to Training Standards:

Branch 1	5321.2, 5322.1, 5324.1, 5324.4
Branch 2	5330.5, 5333.1, 5333.2, 5333.6, 5335.1, 5335.4, 5336.1

Duration: 1 Total Hour Theory: 0.5 hour Practical: 0.5 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to inspect a work site to ensure a safe and efficient operation, in accordance with a pre-lift plan.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.1.1 Establish the location of the crane giving consideration to:
- accessibility of site
- grade of the site
- soil conditions
- distance to embankments
- initial load location
- load placement
- overhead obstructions
- distance to electrical power lines
- known underground hazards
- weather conditions
- other potential hazards

1.1.2 Determine blocking/donnage to be used according to soil conditions

1.1.3 Determine the requirement for communications, signallers, flag persons, barriers, grounding and bonding.

1.2 – Crane lifting capacity

Cross Reference to Training Standards:

Branch 1	5321.3, 5321.4, 5321.5, 5321.6, 5324.2, 5325.3, 5326.3,
Branch 2	5333.4, 5333.5, 5336.3

Duration: 0.5 Total Hour Theory: 0.5 hour Practical: 0 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to determine that the lifting capacity of a hydraulic crane is sufficient when considering the configuration and attachments required for a lift.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.2.1 Establish optimum boom configurations (e.g., boom length, boom angle, radius, hook height).

1.2.2 Select a configuration appropriate for lifting the load by taking into consideration radius, parts of line, height and the combined weight of the load and rigging for a given crane.

1.2.3 Verify that, for a given crane, the configuration is appropriate for the lift.

1.3 – Load/capacity charts

Cross Reference to Training Standards:

Branch 1 5321.1, 5321.6

Duration: 10.5 Total Hours Theory: 4 hours Practical: 6.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to use a hydraulic crane load/ capacity chart to determine the gross capacity for basic applications.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.3.1 State the elements of a load/capacity chart to include:
- boom length
- boom angle
- attachments
- radius
- quadrant
- weight of the load
- weight of the rigging

1.3.2 Locate the specific information from a load/capacity chart.

1.3.3 Determine, given the load/capacity technical data and lift information, whether the lift can be done within manufacturers' specifications.

Number:	S0310
Title:	**Hydraulic crane operations**
Duration:	28 Total Hours
	Theory: 4 hours Practical: 24 hours
Prerequisites:	Level 1
Co-requisites:	N/A

2.1 Interpret operating manuals
2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

2.2 Pre-operational inspections
3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

2.3 Pre-operational setup
3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

2.4 Hoisting techniques
8 Total Hours Theory: 1 hour Practical: 7 hours

2.5 Operate hydraulic crane
10 Total Hours Theory: 1 hour Practical: 9 hours

2.6 Leave crane unattended
2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:
Manufacturers' manuals
Occupational Health and Safety Act (OHSA)
Training Delivery Agent (TDA) policies

Equipment requirements:
Mobile hydraulic crane

2.1 – Interpret operating manuals

Cross Reference to Training Standards:

Branch 1	5319.1
Branch 2	5331.1

Duration: 2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to apply inspection, setup and operating information from the manufacturers' operator manuals for a given hydraulic crane.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.1.1 Locate specific information in a manufacturers' manual related to the inspection, setup and operation for a given crane.

2.1.2 Interpret specific information in a manufacturers' manual related to the inspection, setup and operation for a given crane.

2.2 – Pre-operational inspections

Cross Reference to Training Standards:

Branch 1

Duration: 3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to safely and efficiently perform a pre-operational inspection of a hydraulic crane, in accordance with manufacturers' recommendations, Occupational Health and Safety Act (OHSA) and Training Delivery Agent (TDA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.2.1 State the recommended sequence of inspection.

2.2.2 Verify that the operator aids for the given crane are in place.

2.2.3 Confirm that all pertinent inspection reports are completed and filed, according to OHSA and TDA.

2.2.4 Confirm that all safety and emergency devices are in place and operational.

2.2.5 Locate all controls and system gauges.

2.2.6 Perform a pre-operation inspection for a given crane, according to manufacturers' procedures.

2.2.7 Perform a function test on the hoist system.

2.2.8 Perform basic repairs and maintenance.

2.2.9 Report any defects or deficiencies to the supervisor.

2.2.10 Record any defects or deficiencies in the crane log book.

2.2.11 Record all repairs or maintenance in the appropriate crane log book.

2.3 – Pre-operational setup

Cross Reference to Training Standards:

Branch 1	5324.3, 5324.5, 5324.6, 5324.7, 5324.8, 5324.9, 5325.1
Branch 2	5335.1, 5335.3

Duration: 3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to set up a given hydraulic crane, in accordance with the manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.3.1 State the setup procedure.

2.3.2 Identify overhead obstructions and underground hazards in the lift area.

2.3.3 Ensure that the blocking/donnage is sufficient when considering load requirements and surface conditions.

2.3.4 Program or adjust safety devices, according to manufacturers' recommendations.

2.4 – Hoisting techniques

Cross Reference to Training Standards:

Branch 1	5319.2, 5319.3, 5319.4, 5319.5, 5319.6, 5319.7, 5319.8, 5319.9, 5319.12, 5319.13, 5319.14, 5319.16, 5319.17, 5319.18, 5319.19, 5319.20, 5319.21
Branch 2	5330.4, 5331.2, 5331.3, 5331.4, 5331.5, 5331.6, 5331.7, 5331.8, 5331.9, 5331.10, 5331.13, 5331.14, 5335.3, 5335.5, 5335.6, 5335.7, 5336.1

Duration: 8 Total Hours Theory: 1 hour Practical: 7 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform basic hoisting operations using a hydraulic crane in a safe and efficient manner, in accordance manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.4.1 Operate a hydraulic crane with and without a load by:
- booming up/down
- telescoping in/out
- slewing clockwise and counterclockwise
- hoisting up and down

2.4.2 Maintain control of the hook block in a safe manner through all functions.

2.4.3 Describe pick and carry procedure.

2.4.4 Perform a pick and carry lift.

2.5 – Operate hydraulic crane

Cross Reference to Training Standards:

Branch 2 5335.2, 5336.12, 5336.13

Duration: 10 Total Hours Theory: 1 hour Practical: 9 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to lift a given load using a hydraulic crane, in accordance with the lift instructions and the manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.5.1 Assess the lift site.
2.5.2 Plan the lift.
2.5.3 Perform a pre-operational inspection of the crane.
2.5.4 Set up the crane.
2.5.5 Rig the load.
2.5.6 Hoist the load.
2.5.7 Monitor equipment performance.
2.5.8 Troubleshoot equipment problems.
2.5.9 Move the load to the intended destination.
2.5.10 Perform a post-operational procedure.

2.6 – Leave crane unattended

Cross Reference to Training Standards:

Branch 1 5318.10, 5318.11

Duration: 2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

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GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to prepare a hydraulic crane to be left unattended for short or long periods of time, in accordance with manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.6.1 State the procedure for leaving a hydraulic crane unattended for short periods of time (e.g., lunch breaks).

2.6.2 State the procedure for leaving a hydraulic crane unattended for long periods of time (e.g., overnight, weekends).

2.6.3 Perform shutdown procedure, including:
- clean wheels/tracks and attachments
- park equipment in appropriate location
- shut down and secure equipment
- perform housekeeping tasks
- conduct post-operational inspection

Number:	S0311
Title:	**Lift planning – Conventional cranes**
Duration:	12 Total Hours
	Theory: 5 hours Practical: 7 hours
Prerequisites:	Level 1
Co-requisites:	N/A

3.1 Site assessment

1 Total Hour Theory: 0.5 hour Practical: 0.5 hours

3.2 Crane lifting capacity

0.5 Total Hours Theory: 0.5 hour Practical: 0 hours

3.3 Load /capacity charts

10.5 Total Hours Theory: 4 hours Practical: 6.5 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:

Equipment requirements:
Mobile conventional crane

3.1 – Site assessment

Cross Reference to Training Standards:

Branch 1	5321.2, 5322.1, 5324.1, 5324.4
Branch 2	5330.5, 5333.1, 5333.2, 5333.6, 5335.1, 5335.4, 5336.13

Duration: 1 Total Hour Theory: 0.5 hour Practical: 0.5 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to inspect a work site to ensure a safe and efficient conventional crane operation, in accordance with a pre-lift plan.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

3.1.1 Establish the location of the crane by giving consideration to:
- accessibility of site
- grade of the site
- soil conditions
- distance to embankments
- initial load location
- load placement
- overhead obstructions
- distance to electrical power lines
- known underground hazards
- weather conditions
- other potential hazards

3.1.2 Determine blocking/donnage to be used according to soil conditions.

3.1.3 Determine the requirement for communications, signallers, flag persons, barriers, grounding and bonding.

3.2 – Crane lifting capacity

Cross Reference to Training Standards:

Branch 1	5321.3, 5321.4, 5321.5, 5321.6, 5324.2, 5325.3, 5326.3
Branch 2	5333.4, 5333.5, 5336.3

Duration: 0.5 Total Hours Theory: 0.5 hour Practical: 0 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to determine that the lifting capacity of a conventional crane is sufficient when considering the configuration and attachments required for a given lift.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

3.2.1 Establish optimum boom configurations (e.g., boom length, boom angle, radius, hook height).

3.2.2 Select a configuration appropriate for lifting the load by taking into consideration radius, parts of line, height and the combined weight of the load and rigging for a given crane.

3.2.3 Verify that, for a given crane, the configuration is appropriate for the lift.

3.3 – Load/capacity charts

Cross Reference to Training Standards:

Branch 1 5321.1, 5321.6

Duration: 10.5 Total Hours Theory: 4 hours Practical: 6.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to use a conventional crane load/capacity chart to determine the gross capacity for basic applications.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

3.3.1 State the elements of a load/capacity chart, including:
- boom length
- boom angle
- attachments
- radius
- quadrant
- weight of the load
- weight of the rigging

3.3.2 Locate the specific information from a load/capacity chart.

3.3.3 Determine, given the load/capacity technical data and lift information, whether the lift can be done within manufacturers' specifications.

Number:	S0312
Title:	**Conventional crane operations**
Duration:	28 Total Hours
	Theory: 4 hours Practical: 24 hours
Prerequisites:	Level 1
Co-requisites:	N/A

4.1 Interpret operating manuals
2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

4.2 Pre-operational inspections
3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

4.3 Pre-operational setup
3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

4.4 Hoisting techniques
8 Total Hours Theory: 1 hour Practical: 7 hours

4.5 Operate conventional crane
10 Total Hours Theory: 1 hour Practical: 9 hours

4.6 Leave crane unattended
2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:
Manufacturers' manuals
Occupational Health and Safety Act (OHSA)
Training Delivery Agent (TDA) policies

Equipment requirements:
Mobile conventional crane

4.1 – Interpret operating manuals

Cross Reference to Training Standards:

Branch 1	5319.1
Branch 2	5331.1

Duration: 2 Total Hours Theory: 0.5 hours Practical: 1.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to apply inspection, setup and operating information from the manufacturers' operator manuals for a given conventional crane.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.1.1 Locate specific information in a manufacturers' manual related to the inspection, setup and operation for a given crane.

4.1.2 Interpret specific information in a manufacturers' manual related to the inspection, setup and operation for a given crane.

4.2 – Pre-operational inspections

Cross Reference to Training Standards:

Branch 1	5319.2, 5319.3, 5319.4, 5319.5, 5319.6, 5319.7, 5319.8, 5319.9, 5319.12, 5319.13, 5319.14, 5319.16, 5319.17, 5319.18, 5319.19, 5319.20, 5319.21, 5326.1
Branch 2	5330.4, 5331.2, 5331.3, 5331.4, 5331.5, 5331.6, 5331.7, 5331.8, 5331.9, 5331.10, 5331.13, 5331.14, 5335.3, 5335.5, 5335.6, 5335.7, 5336.1

Duration: 3 Total Hours Theory: 0.5 hour Practical: 2.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to safely and efficiently perform a pre-operational inspection on a conventional crane, in accordance with manufacturers' recommendations, Occupational Health and Safety Act (OHSA) and Training Delivery Agent (TDA)

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.2.1 State the recommended sequence of inspection.

4.2.2 Verify that operator aids for the given crane are in place.

4.2.3 Confirm that all pertinent inspection reports are completed and filed, according to OHSA and TDA.

4.2.4 Confirm that all safety and emergency devices are in place and operational.

4.2.5 Locate all controls and system gauges.

4.2.6 Perform a pre-operation inspection for a given crane, according to manufacturers' procedures.

4.2.7 Perform a function test on the hoist system.

4.2.8 Perform basic repairs and maintenance.

4.2.9 Report any defects or deficiencies to the supervisor.

4.2.10 Record any defects or deficiencies in the crane log book.

4.2.11 Record all repairs or maintenance in the appropriate crane log book.

4.3 – Pre-operational setup

Cross Reference to Training Standards:

Branch 1	5324.3, 5324.5, 5324.6, 5324.7, 5324.8, 5324.9, 5325.1
Branch 2	5335.1, 5335.3

Duration: 3 Total Hours Theory: 0.5 hours Practical: 2.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to set up a given conventional crane, in accordance with the manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.3.1 State the setup procedure.

4.3.2 Identify overhead obstructions and underground hazards in the lift area.

4.3.3 Ensure that the blocking/donnage is sufficient when considering load requirements and surface conditions.

4.3.4 Program or adjust safety devices, according to manufacturers' recommendations.

4.4 – Hoisting techniques

Cross Reference to Training Standards:

Branch 1	5319.15, 5325.4, 5325.5, 5325.6, 5325.7, 5325.8, 5325.10, 5326.4, 5326.5, 5326.6, 5326.7, 5326.11
Branch 2	5335.2, 5336.5, 5336.6, 5336.7, 5336.8, 5336.9

Duration: 8 Total Hours Theory: 1 hour Practical: 7 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to use a conventional crane to perform basic hoisting operations in a safe and efficient manner, in accordance with manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.4.1 Operate a conventional crane with and without a load by:
- booming up/down
- slewing clockwise and counterclockwise
- hoisting up and down

4.4.2 Maintain control of the hook block in a safe manner through all functions.

4.4.3 Describe pick and carry procedure.

4.4.4 Perform a pick and carry lift.

4.5 – Operate conventional crane

Cross Reference to Training Standards:

Branch 2 5335.2, 5336.12, 5336.13

Duration: 10 Total Hours Theory: 1 hour Practical: 9 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to lift a given load using a conventional crane, in accordance with lift instructions and manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.5.1 Assess the lift site.
4.5.2 Plan the lift.
4.5.3 Perform a pre-operational inspection of the crane.
4.5.4 Setup the crane.
4.5.5 Rig the load.
4.5.6 Hoist the load.
4.5.7 Monitor equipment performance.
4.5.8 Troubleshoot equipment problems.
4.5.9 Move the load to the intended destination.
4.5.10 Perform a post-operational procedure.

4.6 – Leave crane unattended

Cross Reference to Training Standards:

Branch 1 5318.10, 5318.11

Duration: 2 Total Hours Theory: 0.5 hour Practical: 1.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to prepare a conventional crane to be left unattended for short or long periods of time, in accordance with manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.6.1 State the procedure for leaving a conventional crane unattended for short periods of time (e.g., lunch breaks).

4.6.2 State the procedure for leaving a conventional crane unattended for long periods of time (e.g., overnight, weekends).

4.6.3 Perform shutdown procedure, including:
- clean wheels/tracks and attachments
- park equipment in an appropriate location
- shut down and secure equipment
- perform housekeeping tasks
- conduct post-operational inspection

Mobile Crane Operator - Branch 1 (339A) - Level 3 - Advanced Hoisting Applications

Number:	S0313
Title:	**Lift planning - Hydraulic cranes**
Duration:	8 Total Hours
	Theory: 5 hours Practical: 3 hours
Prerequisites:	Branch 1 - Level 2
Co-requisites:	N/A

1.1 Crane lifting capacity

1 Total Hour Theory: 0.5 hour Practical: 0.5 hour

1.2 Load/ capacity charts

7 Total Hours Theory: 4.5 hours Practical: 2.5 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:

Equipment requirements:
Mobile hydraulic crane

1.1 – Crane lifting capacity

Cross Reference to Training Standards:

Branch 1	5321.3, 5321.4, 5321.5, 5321.6, 5324.2, 5325.3, 5326.3
Branch 2	5333.4, 5333.5, 5336.3

Duration: 1 Total Hour Theory: 0.5 hour Practical: 0.5 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to determine that the lifting capacity of a hydraulic crane is sufficient, considering the configuration and attachments required for a given complex lift.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.1.1 Establish optimum boom configurations (e.g., boom length, boom angle, radius, hook height).

1.1.2 Select a configuration appropriate for lifting the load taking into consideration radius, parts of line, height and the combined weight of the load and rigging.

1.1.3 Verify that, for a given crane, the configuration is appropriate for the lift.

1.2 – Load/capacity charts

Cross Reference to Training Standards:

Branch 1 5321.1, 5321.6

Duration: 7 Total Hours Theory: 4.5 hours Practical: 2.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to use a hydraulic crane load/capacity chart to determine the gross capacity for advanced applications, in accordance with manufacturers' specifications.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.2.1 State the elements of a load/capacity chart, including:
- boom length
- boom angle
- attachments
- radius
- quadrant
- weight of the load
- weight of the rigging

1.2.2 Locate the specific information from a load/capacity chart.

1.2.3 Determine, given the load/capacity technical data and lift information, whether the lift can be done within manufacturers' specifications.

Number:	S0314
Title:	**Hydraulic crane operations**
Duration:	32 Total Hours
	Theory: 2 hours Practical: 30 hours
Prerequisites:	Branch 1 - Level 2
Co-requisites:	N/A

2.1 Operate hydraulic crane

32 Total Hours Theory: 2 hours Practical: 30 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:
Manufacturers' manuals
Occupational Health and Safety Act (OHSA)
Training Delivery Agent (TDA) policies

Equipment requirements:
Mobile hydraulic crane

2.1 – Operate hydraulic crane

Cross Reference to Training Standards:

Branch 2 5335.2, 5336.12, 5336.13

Duration: 32 Total Hour Theory: 2 hours Practical: 30 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform a complex lift using a hydraulic crane, in accordance with the lift instructions and the manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

2.1.1 Assess the lift site.

2.1.2 Plan the lift.

2.1.3 Perform a pre-operational inspection of the hydraulic crane.

2.1.4 Set up the hydraulic crane.

2.1.5 Rig the load.

2.1.6 Hoist the load.

2.1.7 Monitor equipment performance.

2.1.8 Troubleshoot equipment problems.

2.1.9 Move the load to the destination.

2.1.10 Perform the post-operational procedure.

Number:	S0315
Title:	**Lift planning - Conventional cranes**
Duration:	8 Total Hours
	Theory: 5 hours Practical: 3 hours
Prerequisites:	Branch 1 - Level 2
Co-requisites:	N/A

3.1 Crane lifting capacity

1 Total Hour Theory: 0.5 hour Practical: 0.5 hour

3.2 Load/ capacity charts

7 Total Hours Theory: 4.5 hours Practical: 2.5 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:

Equipment requirements:
Mobile conventional crane

3.1 – Crane lifting capacity

Cross Reference to Training Standards:

Branch 1	5321.3, 5321.4, 5321.5, 5321.6, 5324.2, 5325.3, 5326.3
Branch 2	5333.4, 5333.5, 5336.3

Duration: 1 Total Hour Theory: 0.5 hours Practical: 0.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to determine that the lifting capacity of a conventional crane is sufficient, considering the configuration and attachments required for a given complex lift.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

3.1.1 Establish optimum boom configurations (e.g., boom length, boom angle, radius, hook height).

3.1.2 Select a configuration appropriate for lifting the load when taking into consideration radius, parts of line, height and the combined weight of the load and rigging.

3.1.3 Verify that, for a given crane, the configuration is appropriate for the lift.

3.2 – Load/capacity charts

Cross Reference to Training Standards:

Branch 1 5321.1, 5321.6

Duration: 7 Total Hours Theory: 4.5 hours Practical: 2.5 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to use a conventional crane load/capacity chart to determine the gross capacity for advanced applications.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

3.2.1 State the elements of a load/capacity chart, including:
- boom length
- boom angle
- attachments
- radius
- quadrant
- weight of the load
- weight of the rigging

3.2.2 Locate the specific information from a load/capacity chart.

3.2.3 Determine, given the load/capacity technical data and lift information, whether the lift can be done within manufacturers' specifications.

Number:	S0316
Title:	**Conventional crane operations**
Duration:	32 Total Hours
	Theory: 2 hours Practical: 30 hours
Prerequisites:	Branch 1 - Level 2
Co-requisites:	N/A

4.1 Operate conventional crane

32 Total Hours Theory: 2 hours Practical: 30 hours

Evaluation structure:
Knowledge and the application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:
Manufacturers' manuals
Occupational Health and Safety Act (OHSA)
Training Delivery Agent (TDA) policies

Equipment requirements:
Mobile conventional crane

4.1 – Operate conventional crane

Cross Reference to Training Standards:

Branch 1	5326.1,
Branch 2	5335.2, 5336.12, 5336.13

Duration: 32 Total Hours Theory: 2 hours Practical: 30 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform a complex lift using a conventional crane, in accordance with the lift instructions and the manufacturers' recommendations.

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

4.1.1 Assess the lift site.

4.1.2 Plan the lift.

4.1.3 Perform a pre-operational inspection of the conventional crane.

4.1.4 Set up the conventional crane.

4.1.5 Rig the load.

4.1.6 Hoist the load.

4.1.7 Monitor equipment performance.

4.1.8 Troubleshoot equipment problems.

4.1.9 Move the load to the destination.

4.1.10 Perform the post-operational procedure.

Mobile Crane Operator - Branch 1 (339A) - Level 4 - Specialized Hoisting Applications

Number:	S0317
Title:	**Specialized hoisting operations**
Duration:	80 Total Hours
	Theory: 38 hours Practical: 42 hours
Prerequisites:	Branch 1 - Level 3
Co-requisites:	N/A

1.1 Elevated work platform
6 Total Hours Theory: 2 hours Practical: 4 hours

1.2 Engineered lift
6 Total Hours Theory: 2 hours Practical: 4 hours

1.3 Precision lift
12 Total Hours Theory: 4 hours Practical: 8 hours

1.4 Heavy lift
6 Total Hours Theory: 2 hours Practical: 4 hours

1.5 Dragline and clam operations
4 Total Hours Theory: 3 hours Practical: 1 hour

1.6 Foundation and shoring operations
4 Total Hours Theory: 3 hours Practical: 1 hour

1.7 Multiple crane lift
40 Total Hours Theory: 20 hours Practical: 20 hours

1.8 Water lift
2 Total Hours Theory: 2 hours Practical: 0 hours

Evaluation structure:
Knowledge of all aspects of mobile crane operations is evaluated by theory testing. The application of safe working practices will be monitored throughout the training and considered during practical evaluations.

Learning reference material:
Manufacturers' manuals
Occupational Health and Safety Act (OHSA)

Equipment requirements:

1.1 – Elevated work platform

Cross Reference to Training Standards:

Branch 1	5325.11, 5326.9, 5326.10
Branch 2	5336.10, 5336.11

Duration: 6 Total Hour Theory: 2 hours Practical: 4 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to operate an elevated work platform in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.1.1 Describe the operating procedure with an elevated work platform.
1.1.2 Assess the lift site.
1.1.3 Plan the lift.
1.1.4 Attach the elevated work platform.
1.1.5 Perform a pre-operational inspection of the crane.
1.1.6 Set up the crane.
1.1.7 Hoist the elevated work platform.
1.1.8 Monitor equipment performance.
1.1.9 Troubleshoot equipment problems.
1.1.10 Move the platform to the intended destination.
1.1.11 Perform the post-operational procedure.

1.2 – Engineered lift

Cross Reference to Training Standards:

Branch 1	5325.9, 5326.9
Branch 2	5336.10

Duration: 6 Total Hour Theory: 2 hours Practical: 4 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform an engineered lift in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.2.1 Describe the procedure for an engineered lift.
1.2.2 Assess the lift site.
1.2.3 Plan the lift.
1.2.4 Perform a pre-operational inspection of the crane.
1.2.5 Set up the crane.
1.2.6 Rig the load.
1.2.7 Perform the engineered lift.
1.2.8 Monitor equipment performance.
1.2.9 Troubleshoot equipment problems.
1.2.10 Move the load to the intended destination.
1.2.11 Perform the post-operational procedure.

1.3 – Precision lift

Cross Reference to Training Standards:

Branch 1	5325.9, 5326.9
Branch 2	5336.10

Duration: 12 Total Hour Theory: 4 hours Practical: 8 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform a precision lift in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.3.1 Describe the procedure for a precision lift.

1.3.2 Assess the lift site.

1.3.3 Plan the lift.

1.3.4 Perform a pre-operational inspection of the crane.

1.3.5 Set up the crane.

1.3.6 Rig the load.

1.3.7 Perform the precision lift.

1.3.8 Monitor equipment performance.

1.3.9 Troubleshoot equipment problems.

1.3.10 Move the load to the intended destination.

1.3.11 Perform the post-operational procedure.

1.4 – Heavy lift

Cross Reference to Training Standards:

Branch 1	5325.9, 5326.9
Branch 2	5336.10

Duration: 6 Total Hour Theory: 2 hours Practical: 4 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform a heavy lift in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.4.1 Describe the procedure for a heavy lift.

1.4.2 Assess the lift site.

1.4.3 Plan the lift.

1.4.4 Perform a pre-operational inspection of the crane.

1.4.5 Set up the crane.

1.4.6 Rig the load.

1.4.7 Perform the heavy lift.

1.4.8 Monitor equipment performance.

1.4.9 Troubleshoot equipment problems.

1.4.10 Move the heavy load to the intended destination.

1.4.11 Perform the post-operational procedure.

1.5 – Dragline and clam operations

Cross Reference to Training Standards:

Branch 1	5325.9, 5326.9
Branch 2	5336.10

Duration: 4 Total Hour Theory: 3 hours Practical: 1 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform dragline and clam operations in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.5.1 Describe the procedure for dragline and clam operations.

1.5.2 Describe the crane configuration for dragline and clam operations.

1.5.3 Describe considerations when working from a land-based worksite.

1.5.4 Describe considerations when working from a floating platform.

1.5.5 State post-operational procedure.

1.6 – Foundation and shoring operations

Cross Reference to Training Standards:

Branch 1	5325.9, 5326.9
Branch 2	5336.10

Duration: 4 Total Hour Theory: 3 hours Practical: 1 hour

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform foundation and shoring operations in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.6.1 Describe foundation and shoring structures and attachments, including:
- drilling unit
- pile driving unit
- extraction unit

1.6.2 Describe the procedure for foundation and shoring operations.

1.6.3 Describe considerations for operating at a worksite.

1.6.4 State post-operational procedure.

1.7 – Multiple crane lift

Cross Reference to Training Standards:

Branch 1	5325.9, 5326.9
Branch 2	5336.10

Duration: 40 Total Hour Theory: 20 hours Practical: 20 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform a multiple crane lift in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.7.1 Calculate the load on each crane during a multiple crane lift.

1.7.2 Describe the procedure for a multiple crane lift.

1.7.3 Assess the lift site.

1.7.4 Plan a variety of lifts, such as:
- standing up a horizontal object
- laying down a vertical object
- lifting a slab

1.7.5 Perform a pre-operational inspection of the cranes.

1.7.6 Set up the cranes.

1.7.7 Rig the load.

1.7.8 Perform the lift.

1.7.9 Monitor equipment performance.

1.7.10 Troubleshoot equipment problems.

1.7.11 Move the load to the intended destination.

1.7.12 Perform the post-operational procedure.

1.8 – Water lift

Cross Reference to Training Standards:

Branch 1	5326.9
Branch 2	5336.10

Duration: 2 Total Hours Theory: 2 hours Practical: 0 hours

GENERAL LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to perform a lift of an object in or out of water in a safe and efficient manner, in accordance with the lift instructions, manufacturers' recommendations and Occupational Health and Safety Act (OHSA).

LEARNING OUTCOMES:

Upon successful completion, the apprentice is able to:

1.8.1 Describe the procedure for a water lift.
1.8.2 Assess the lift site.
1.8.3 Plan the lift.
1.8.4 Perform a pre-operational inspection of the crane.
1.8.5 Set up the crane.
1.8.6 Rig the load.
1.8.7 Perform the lift (real or simulated).
1.8.8 Monitor equipment performance.
1.8.9 Troubleshoot equipment problems.
1.8.10 Move the load to the intended destination.
1.8.11 Perform the post-operational procedure.